

# THE FIRST PHYSIOGRAPHIC MAP MADE BY ERWIN RAISZ

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## **Abstract**

*Erwin Raisz was born in 1893 in the city of Levoča (former Austro-Hungarian Monarch). His international fame mainly began with the development of his physiographic method for the representation of the relief on maps, which was described in his article entitled "The physiographic method of representing scenery on maps" published in the Geographical Review in 1931. Cartographers used the physiographic method, but currently few people can answer to the question of which was the first map made by Raisz using this method? Based on Raisz's own testimony, the first map made completely by himself was the „Diagrama Fisiográfico de Cuba”, a little masterpiece which is practically unknown for the international cartographic community. In its creation played a leading role the Prof. Salvador Massip, one of the most important Cuban geographers in the 20th century,. The characteristics of this map are described in the current article, including the different graphic solutions, the influence of the map in the physiographic legend defined by Raisz in his article of 1931 and the particular role played by the collaboration between Raisz and Massip in the posterior development of Cuban Cartography to 1959.*

**Keywords:** Raisz, Massip, physiographic map, Cuba

## **1. THE AUTHORS**

### **1.1 Erwin Raisz**



*Figure 1. Portrait of Erwin Raisz from the Atlas of Global Geography (Raisz, 1944)*

Erwin Josephus Raisz (1893–1968). He was born in 1893 in the city of Levoča of the former Austro-Hungarian Monarchy (Hungarian name: Lőcse, now in the East region of current Slovakia) and obtained a degree in Civil Engineering and Architecture at the Royal Polytechnicum (*Magyar Királyi József Műegyetem*) in Budapest in 1914

(Karsay, 2009). After the 1<sup>st</sup> World War, in 1923, he emigrated to the United States and began to work simultaneously for the Ohman Map Company and Columbia University in New York. At this university he obtained a degree of Master of Arts in 1923 (McMaster, 2002). He was the first professor to organize and teach a course on Cartography at Columbia, which at same time was one of the first such courses in the country (Anon., 2012). In 1929, he obtained his Ph.D. in Geology, presenting a dissertation entitled „*Scenery of Mount Desert Island: its origin and development*”, which can be considered the first research work related to the creation and posterior development of his physiographic method for the representation of landforms.

In 1931 he left the Columbia University and followed his research and teaching activities at the Institute of Geographic Explorations of Harvard University. Here published his “*General Cartography*” in 1938, which was the first textbook on Cartography published in the United States and the only one book written in English on this subject for the next fifteen years (McMaster, 2002). After the closure of the Institute of Geographic Explorations in 1951, continues teaching at Clark University in Boston until 1961. From 1957 until his death he worked at the University of Florida, where he published his book entitled “*Principles of Cartography*” in 1962. In his long professional career he was the author of numerous maps, but only three Atlas: Atlas of Global Geography (Global Press, 1944), Atlas de Cuba (Atlas of Cuba, Harvard University Press, 1949) and Atlas of Florida (University of Florida Press, 1964).

## 1.2 Salvador Massip



Figure 2. Salvador Massip Valdés

Salvador Massip Valdés (1891–1978). He was born in the province of Artemisa, Cuba on 19 April 1891. In 1912 and 1915 he obtained degrees on Pedagogy and on Philosophy and Humanities at Havana University. Few years later he travelled to USA and obtained a degree of Master of Arts at Columbia University in New York in 1922. Massip began his teaching activities at Havana University in 1924, being the founder of the Department of Geography in this institution in 1927. Geography was the most important, but not the only one subject taught by him, because his wide knowledge field covered also Anthropology and History. He taught in numerous Cuban educational institutions, but his experience as Professor of Geography was recognized at international level too, giving lectures in higher education institutions of Mexico and USA (New York, Miami, Chicago, Austin, Northampton and Puerto Rico). Massip represented Cuba in numerous international events, organizations and institutions, filling the position of President of the Pan American Institute of Geography and History in the period 1929-1932 (Anonymous, 2016). He introduced by first time the teaching of Economic Geography at Havana University in 1937 (Peraza Sarausa, 1957). In 1942 he was elected as member of the National Council for Education and Culture, to expand the teaching of Geography in the secondary education with the introduction of courses on General and Regional Geography as well as Geography of Cuba.

After 1959 Massip was named Ambassador of Cuba first in Mexico and later in Poland, returning to the Havana University in 1962. In this year he joined the National Commission of the Academy of Sciences, being one of the founder members of the academy (León Mendez & Valdés Rojas, ?). He served as Director of the Institute of Geography and Geology to 1966, when “officially” retired, but followed his professional activities working on the edition of the National Atlas of Cuba that was printed in the Soviet Union and published in 1969. In his professional life he was the author of more than 400 articles and 5 textbooks together with other scientific books on Geography.

## 2. FIRST CONTACTS BETWEEN RAISZ AND MASSIP

In 1922 Salvador Massip concluded his studies on Geography at the Columbia University, obtaining the title of Master of Arts. He maintained his professional contacts with the Columbia University, where Erwin Raisz began to work a year after that Massip returned to Cuba. During the following years Massip followed his work in interest of developing Geography in Cuba, being the founder of the first department of Geography in the country in 1927. At same time Massip developed a close professional collaboration with the young professor arrived from Budapest and he had the opportunity to learn first-hand the research followed by the Hungarian cartographer. Raisz told him about a new method for the representation of relief that was developing and later called physiographic method. They decided to work together on a large-scale map of Cuba using the method created by Raisz, as he remembered in an abstract published in the Bulletin of the Geological Society of America in 1930: "The author was commissioned in the summer 1929 by Professor Salvador Massip, of the University of Havana, to prepare a large-scale block-diagram of Cuba, with aid of the topographic maps and other available *sources*..." (Raisz, 1930).

The result of their common efforts was published by the end of 1929: it was the Physiographic Diagram of Cuba (Original title in Spanish: *Diagrama fisiográfico de Cuba*). As an interesting detail, this same year Massip is elected President of the Pan American Institute of Geography and History for a period of three years.

## 3. THE DIAGRAMA FISIOGRÁFICO DE CUBA

Although Erwin Raisz named it as a "block-diagram" (Raisz, 1930), a specialist (cartographer, geographer, etc) can better identify the physiographic diagram of Cuba as a physical map with an extremely rich and thorough representation of landforms of the country (Figure 3).



Figure 3. Overview of the Diagrama Fisiográfico de Cuba

### 3.1 General characteristics

The size of the map is 125x30 cm and it was printed in two colors (Raisz and Massip, 1929). The map title and colophon reads in Spanish: "Physiographic Diagram of Cuba, designed by Dr. Erwin J. Raisz, Mapping instructor at Columbia University, New York, under the direction of Dr. Salvador Massip, Professor of Geography at the University of Havana, 1929" (Figure 4).





Figure 4. Fragment of the map showing the title, colophon, overview map and the western tip of the country

The authors did not indicate the scale on the map. This lack was corrected only years later by the same person who was responsible for recording this work in the Map Collection of the National Library “José Martí” in Havana, as can be seen by examining the style of the letter and the ink used in the map margin notes. In these notes the user can read that the map was donated by the Faculty of Humanities (University of Havana) in 1961. According to his calculations, the map scale is 1: 1 200 000 (Figure 4).

A small and simple overview map can be found below the title and colophon of map. It illustrates the small differences between the distorted “physiographic diagram” and the original source map, which was possibly made using a *Plate Carrée* (or simple) equirrectangular cylindrical projection (Figure 4). These distortions came after tilting the original map in the interest of achieving a perspective that harmonizes with the physiographic method used to represent the landscapes. The country was divided into six sections (Figure 1), whose boundaries were selected to cross very characteristic geographical regions and simultaneously show us the geological structure of the area in question (Figure 5). Unfortunately the map does not include a legend with the symbolization used for the representation of the geological layers, but e.g. limestone layers are represented by the symbol traditionally used in the geological cartography, so they are easily identifiable.

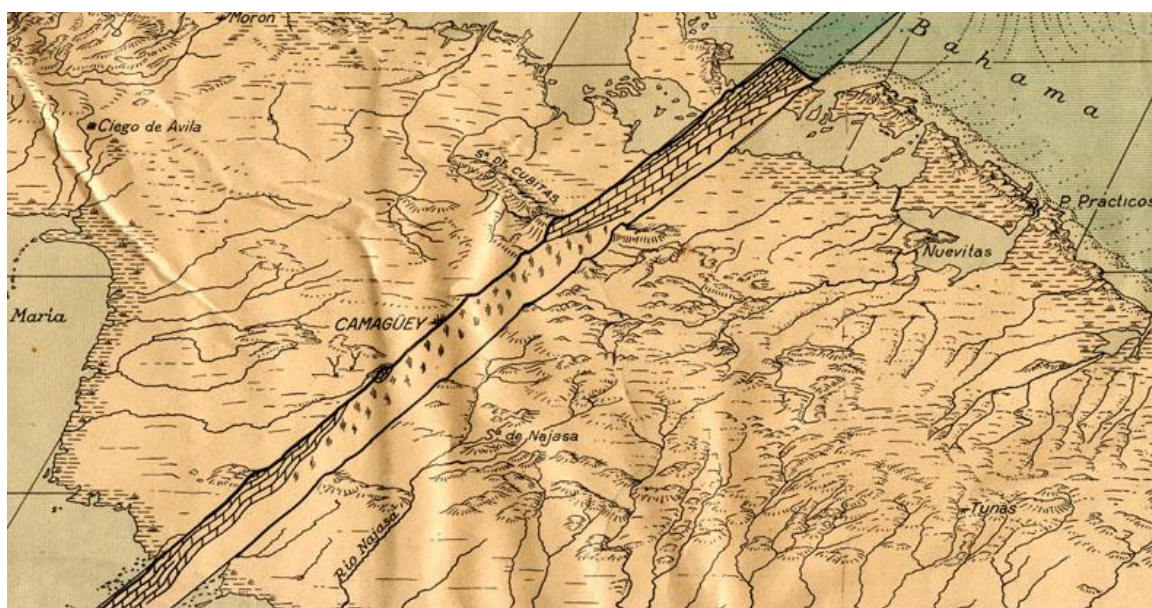


Figure 5. Fragment of the map with one boundary between two sections, showing the geological layers of the area

Raisz drew a hydrography very rich in details, highlighting with broken lines the marshes that are very frequent on the coasts of the island and with points the sandy shores. The submarine relief could only be represented schematically, highlighting the approximate boundaries of the shallow seabed.

The nomenclature of the map is intentionally understated, writing only those geographical names which are indispensable for its relevance. This decision was taken in the interest of nomenclature interfere or cover at least the visual representation of the relief possible. Although only wrote the names of the main rivers, mountains and cities, it is sometimes inevitable that the name hidden, at least minimally, some detail of relief from the eyes of the reader.

### 3.2 Representing landforms

The representation of relief is very meticulous, and we can find on the map some of the basic symbols of relief that two years later Raisz included in his first article on the physiographic method: “*The physiographic method of representing scenery on maps*”, which was published in the Geographical Review of the American Geographical Society (Raisz, 1931).

The study of the Cuban relief had a connotation that can be considered special but also modest: one of the most characteristic landforms of the Cuban Geography, the *mogote* (basic form of relief formed by limestone, which is prominent and isolated as well has a rounded shape and top) enriched the physiographical symbology published by Raisz in 1931. It was included separately using an English transcription of the original Spanish word (“magotes”) and indicating its Cuban origin, as shown in Figure 6.

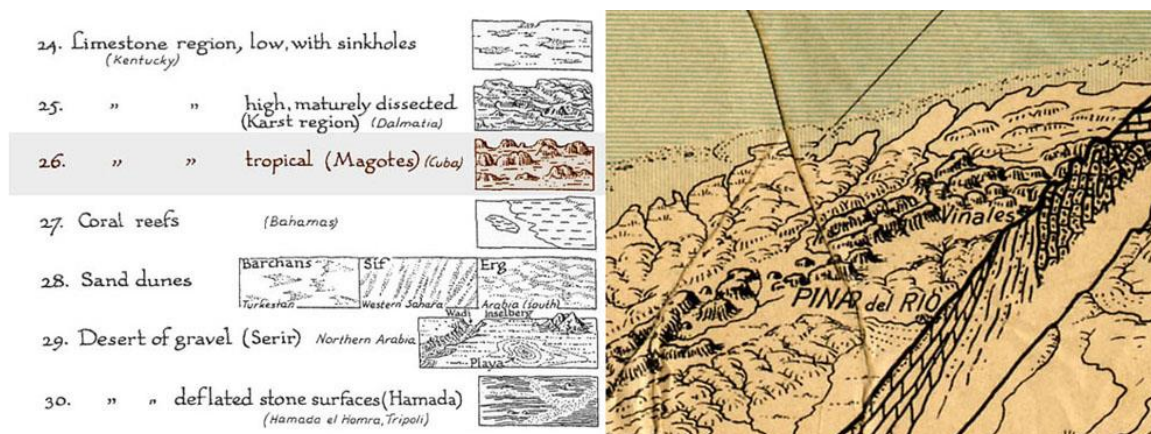


Figure 6. Fragment of the table of physiographic symbols created by Raisz for his article of 1931 and of the “Diagrama Fisiográfico de Cuba” with the “mogotes” as a very characteristic and autochthon landform of the occidental region of Cuba

As Raisz wrote in 1930, they used mainly topographic maps (and Massip’s knowledge about the Cuban geography) to draw the physiographic diagram. It was due the lack of other materials (e.g. aerial photos) that could be used as reference to draw the different landforms. Massip did his best to improve this situation, not only developing research on the topic of Geography of Cuba, but also obtaining the governmental support to his scientific activities in the decade of 1930. He invited Erwin Raisz and Howard A. Meyerhoff (distinguished professor and geologist) to participate in these activities, traveling around the country together and organizing flights to take aerial photos of the Cuban territory for scientific purposes by first time. About 10 years later Massip’s disciple, Gerardo Canet, also organized flights with the participation of Erwin Raisz and other Cuban geographers. The result of their collaboration was a new map of the country entitled “Map of Landscapes of Cuba” published in 1945 (Canet and Raisz, 1949), which offered an updated and more detailed representation of landforms than the physiographic diagram of 1929 (Figure 7).



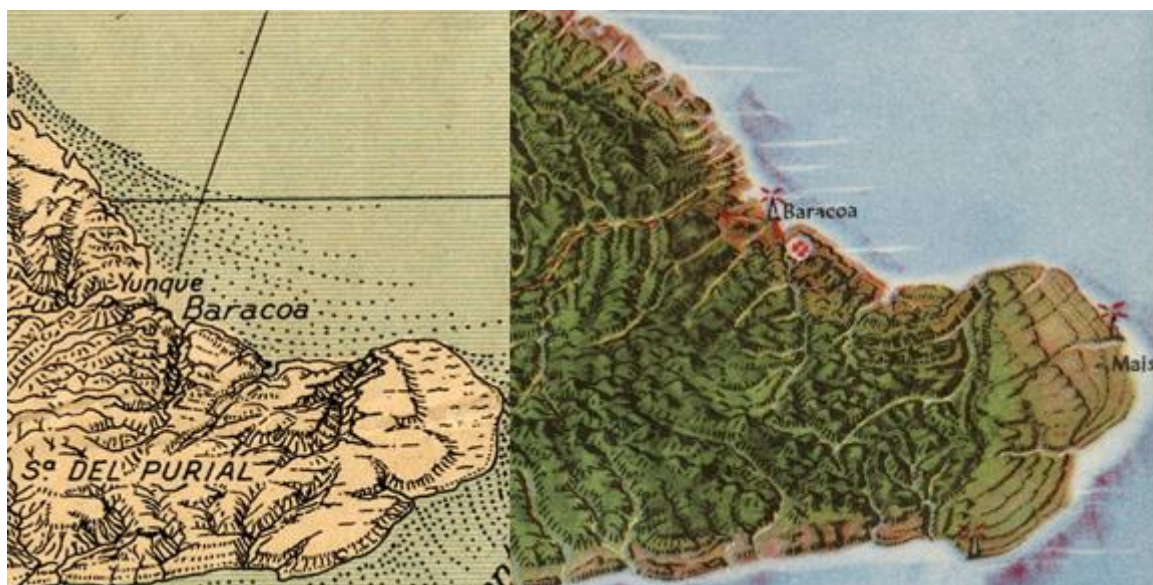


Figure 7. Comparison of the Eastern region of the island in the “Physiographic Diagram of Cuba” of 1929 (left) and in the “Map of Landscapes of Cuba” of 1945 (right)

### 3.3 Relevance of the physiographic diagram

The importance of this map is emphasized by Raisz at the end of his article of 1931, when listing the maps made with the physiographic method for the representation of landforms to date. He wrote:

*“The lack of detailed physiographic maps from which information can be taken is a more serious question. Very little has yet been done in this field. The United States and Europe have been worked out by Professor A. K. Lobeck. For Asia we expect soon to have the map of Professor F. K. Morris. New Zealand has been worked out by C. A. Cotton (not yet published), and Cuba by the author (E. J. Raisz: *Diagrama fisiográfico de Cuba, Havana 1929*)...”* (Raisz, 1931:304)

According to his own words, the “Diagrama fisiográfico de Cuba” published in 1929 can be considered the **first map** entirely worked out by Erwin Raisz using his physiographic method.

Other interesting detail is that this map is not known at international level, because of the low number of copies that survived the passage of time. Even in Cuba, I have only knowledge of a copy which was in the Map Collection of the National Library José Martí in Havana in 2004. On the Web we can access a site entitled “*Raisz Landform Maps*” (<http://raiszmaps.com>), where are offered for sale copies of a total of 33 maps made by Erwin Raisz, but this map of Cuba is not among them. Only 11 references were found when writing the Spanish title of the map on the Google search engine in January 2016: One of them with data from the hard copy donated by me to the National István Széchenyi Library of Hungary in 2004, two references related to presentations I did on this topic first in Buenos Aires in 2008 and later in Budapest in 2014, as well as eight references on biographies of Erwin Raisz, but without any reproduction of the “*Diagrama fisiográfico*”. This map is also mentioned in the obituary on Raisz, which was written by the famous American cartographer Arthur H. Robinson (1969) and was published in the “*Annals of the Association of American Geographers*” in March 1970, as well as in an article written by two Cuban specialists (León Méndez y Valdés Roja, nd) on the life and work of Salvador Massip that can be consulted on the web and in which they state that: “*Moreover, it was important the contribution that Dr. Massip paid to secondary education in those years, in the making of school maps as a needed tool of instruction. At the same time, other contribution made to the school cartography of the country in this period, which represented a valuable contribution to the geographical science, was the ‘Physiographic Diagram of Cuba’, a map made with the collaboration of Dr. Erwin Raisz, leading American professor, which was widely used in the teaching of this discipline.*”

#### 4. THE LEGACY OF THE PHYSIOGRAPHIC DIAGRAM



Figure 8. Fragment of the cover of “Atlas de Cuba”(Canet & Raisz 1949)

This work marked the beginning of a fruitful professional relationship of Erwin Raisz with Cuban geographers. This collaboration reached its highest point when a young Cuban geographer disciple of Massip, Gerardo Canet asked Erwin Raisz to be the cartographer editor of an atlas reflecting on its maps the geography, economy, society and politics of Cuba in the first half of the twentieth century. It was entitled “Atlas de Cuba” (Atlas of Cuba) and was published at Harvard in 1949, exactly 20 years after the publication of the physiographic diagram (Figure 8). Their aims when creating the atlas are described in detail in the first sentences of the Introduction: “*This Atlas is more than an attempt to describe Cuba. Our aim is not only to present the setting in which the drama of Cuban life is played but to show how his life itself changes its own setting, creating new problems and new adjustments to them. This dynamic element is usually absent from the impersonal atlases produced by governments, societies and publishing houses, which merely give a graphic report of a given moment of time.*” (Canet & Raisz 1949: 3) Moreover, they intended to create an atlas that could be considered the first national atlas of the country, despite they did not follow the traditional cartographic and graphic solutions as well as the structure, number of pages and design that characterized earlier national atlases. As Raisz wrote in 1962, referring to the publication of national atlases all around the world: “*Almost every country of Europe, in addition to Mexico, the Central American republics, Cuba, Brazil, Argentina, the French colonies, Morocco, Tunis, the Congo, Egypt, India, Japan, China, Australia, Tanganyika, Ghana, etc published such atlases.*” (Raisz 1962:101)

Raisz exerted considerable influence on the development of Cuban cartography in the period 1929-1959. In the first years the Geography textbooks printed in Cuba included maps and diagrams made personally by Raisz, e.g. the textbook entitled “Elementos de Geografía General” (Elements of General Geography) written by Salvador Massip and his wife Sarah E. Ysalgué de Massip, which had its first edition in 1942 (Figure 9).



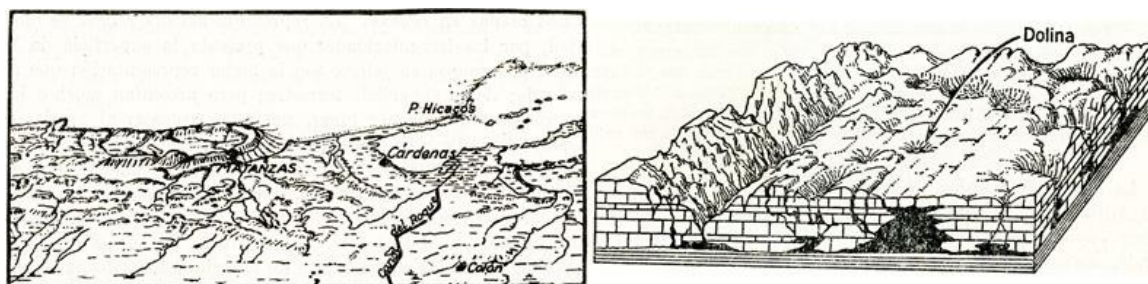


Figure 9. Fragment of the Physiographic Diagram of Cuba and karst block diagram made by Raisz for the “Elementos de Geografía General” textbook (Massip & Ysalgué 1956)

After the publication of “Atlas de Cuba” in 1949, Gerardo Canet followed to spread the teachings of Raisz in Cuba, mainly using his physiographic method on the maps made for text- and scientific books written by Cuban authors. He made numerous maps for the collection of Geography textbooks written by Levi Marrero, another highly esteemed and recognized Cuban personality of the Geography teaching in the years previous to the triumph of the Revolution led by Fidel Castro (1959), as well as for books published in other scientific areas, e.g. the book entitled “Guerra de los 10 Años” (The 10 Years’ War) of the Cuban Historian Ramiro Guerra, which was published in 1950 (Figure 10).

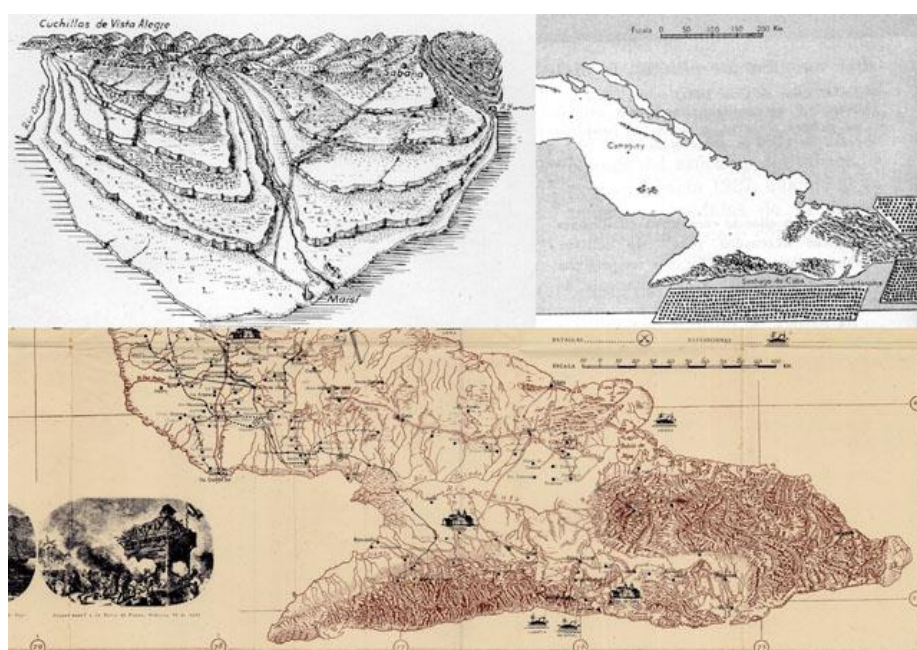


Figure 10. Upper row: block diagram and fragment of map made by Canet for the “Geografía de Cuba” textbook (Marrero, 1955). Bottom row: fragment of the map published in the “Guerra de los 10 Años” book (Guerra, 1950)

Current article intends to be a modest contribution to giving a more detailed idea of the development of the Cuban Cartography and Geography in the first half of the 20<sup>th</sup> century. This aim will be achieved at least in part if this work constitutes an inspiration for further research on this topic.

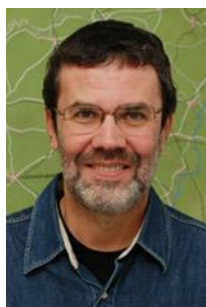
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